Genuine religion has its roots deep down in the heart of humanity and in the reality of things. It is not surprising that by our methods we fail to grasp it: the actions of the Deity make no appeal to any special sense, only a universal appeal; and our methods are, as we know, incompetent to detect complete uniformity. There is a principle of relativity here, and unless we encounter flaw or jar or change, nothing in us responds; we are deaf and blind, therefore, to the Immanent Grandeur unless we have insight enough to recognise in the woven fabric of existence, flowing steadily from the loom in an infinite progress towards perfection, the ever-growing garment of a transcendant God.

SUMMARY OF THE ARGUMENT.

A marked feature of the present scientific era is the discovery of, and interest in, various kinds of atomism; so that continuity seems in danger of being lost sight of.

Another tendency is toward comprehensive negative generalisations from a limited point of view.

Another is to take refuge in rather vague forms of statement, and to shrink from closer examination of the puzzling and the obscure.

Another is to deny the existence of anything which makes no appeal to organs of sense, and no ready response to laboratory experiment.

Against these tendencies the author contends. He urges a belief in ultimate continuity as essential to science; he regards scientific concentration as an inadequate basis for philosophic generalisation; he believes that obscure phenomena may be expressed simply if properly faced; and he points out that the non-appearance of anything perfectly uniform and omnipresent is only what should be expected, and is no argument against its real substantial existence.

NOTES.

IN view of the meeting of the British Association, a "Handbook for Birmingham and the Neighbourhood" has been issued (under the editorship of Dr. G. A. Auden) at the price of 3*s*. 6*d*. net by Messrs. Cornish Bros., Ltd., Birmingham. The volume is of an encyclopædic character, and should be of great service not only to members of the British Association, but to all who are interested in things pertaining to Birmingham. The work is divided into five main divisions—historical, municipal, educational, industrial, and scientific. In the latter, which of course appeals more especially to our readers, botany is dealt with by Prof. West and Messrs. Grove, Humphreys, Cleminshaw, and Duncan; Midland reafforesting by P. E. Martineau; the ornithology of the district by R. W. Chase; insects by H. W. Ellis; mammalia, amphibia, reptilia, and pisces by H. E. Forrest; microscopic aquatic fauna by H. W. H. Darlaston; meteorology by A. Cresswell; and the geology and physiography of the Birmingham country by Prof C. Lapworth, F.R.S. The last-named contribution is supplemented by very clear geological and topographical maps executed by Messrs. John Bartholomew and Co., of Edinburgh. Besides these maps, there are a number of illustrations in the text. Altogether the volume is an admirable production, and worthy of the occasion for which it has been prepared.

Apropos of the British Association meeting, a recent number of *The Westminster Gazette* contains an article on the Lunar Society, the members of which used to meet monthly in Birmingham in the eighteenth century, as nearly as possible at the time of full moon that they might have the benefit of its light in returning home—hence the name of the society. Each member was permitted to bring a friend, and some very distinguished men from time to time enjoyed the society's hospitality. Thus we find that among such guests were Sir Joseph Banks, Sir William Herschel, John Smeaton, of lighthouse fame, Josiah Wedgwood, Prof. Hugh Blair, Afzelius, the Swedish botanist, Daniel Solander, the naturalist, and Andre de Luc, the geologist. Among the members of the society or club were James Watt, Joseph Priestley, and Erasmus Darwin. The Priestley riots dealt a blow to the little society from which it never recovered, and it is therefore now no more than a memory.

PROF. MILNE bequeathed to the British Association his books, albums, and scientific instruments relating to seismology, and, subject to his wife's interest, the sum of 1000*l*. to the chairman of the seismology committee of the British Association for the furtherance of the study of terrestrial physics and its attendant subjects.

A FURTHER grant of 5000*l*., making 10,000*l*. in all, has been made by the Federal Government of the Commonwealth of Australia towards completing the work of the Mawson Antarctic Expedition and bringing the explorers back.

THE sum of 90,000 francs has been bequeathed to the Pasteur Institute at Paris for the founding of a prize for the best original work in the treatment of meningitis.

WE record, with regret, the death on Saturday last of Dr. Hugh Marshall, F.R.S., professor of chemistry in University College, Dundee.

THE death occurred on September 2, at Abo, Finland, at the age of sixty-three years, of Dr. O. M. Reuter, emeritus professor of zoology in the University of Helsingfors.

A BRONZE statue of the late Dr. Ludwig Mond, erected by Messrs. Brunner, Mond and Co., Ltd., on the lawn opposite Winnington Hall, near Northwich, Dr. Mond's residence, is to be unveiled on Saturday next by Sir John Brunner.

A MEMORIAL of the Russian explorer, Baron E. von Toll, in the form of a bronze portrait tablet, is to be set up on Kotelnyi Island, in the New Siberia group, by the leader of the German Taimyrland Expedition.

PAPERS dealing with various problems of heating and lighting are to be read by Prof. Bone, F.R.S., Prof. Vivian B. Lewes, Mr. L. Gaster, and Mr. T. Thorne Baker at a conference which is to take place on October 29 in connection with the National Gas Congress and Exhibition.

THE plumage prohibition clause in the United States Tariff Bill having been sanctioned by the Senate the importation into the United States of the plumage of wild birds, either raw or manufactured, for purposes other than scientific or educational, is prohibited.

THE first installation of wireless telephony in a coal mine in Great Britain has just been fitted up at Dinnington Main Colliery, South Yorkshire, with, it is said, satisfactory results. The system is the invention of Mr. J. H. Reinecke, of Bochum, Westphalia, and is in use in German collieries. According to *The Times* each instrument is connected by two wires with a piece of metal buried in the ground. The wires can also be attached to ordinary tramway rails, water-pipes, &c. At Dinnington instruments have been placed at two points—one in the transformer house near the pit bottom and the other 1000 yards "in-bye," and conversation has been carried on between these points just as through an ordinary telephone with the use of only about 20 yards of wire. The system also admits of the use of portable instruments weighing about 20 lb. each by means of which it is possible to communicate with the fixed stations from any part of the mine. All that is necessary is for the operator to attach the two wires of the instrument to any metallic substance at hand. Thus in the event of a disaster in a pit miners entombed by falls would be able to open up communication with other parts of the colliery. In ordinary working the portable instruments should be very useful in the case of a breakdown of the signalling apparatus, and coal turning could be carried on while the repairs were being done. The portable instrument can also be used in the cage while ascending or descending the shaft.

THE Italian archæological mission to Crete, under the leadership of Prof. Halbherr, announces the discovery at Cortina of a temple dedicated to Egyptian deities, bearing a dedication by Flavia Philyra, the foundress. In the inner cella were found images of Jupiter, Serapis, Isis, and Mercury, with fragments of a colossal statue, supposed to be that of the foundress. A little flight of steps leads down to a subterranean chamber in which ceremonies of purification were performed.

THE excavation of the numerous prehistoric sites in the island of Malta is being actively prosecuted under the direction of Prof. T. Zammit. The most important discovery is that of a series of well tombs of the Punic type at the Kallilia plateau, north-west of Rabat. A large number of skeletons, with pottery, lamps, spindle-whorls, and a circular bronze mirror, has been unearthed. A partial exploration of the Ghar Dalam cave, conducted by Prof. Tagliaferro and Mr. C. Rizzo, produced bones of a hippopotamus and a deer, above which lay a quantity of prehistoric sherds. The museum, by the bequest of the late Mr. Parnis, has received a large collection of books about Malta and numerous antique objects. The *Malta Herald,* in recording the progress of excavation, very reasonably urges that means should be taken to protect the sites partially examined from spoliation by the villagers.

LESS than 300 miles to the north of Rio de Janeiro, on the coast range of Minas Geraes, live the Uti-krag, a tribe of Botocudos still retaining some of their old customs, but rapidly succumbing to the fostering care of the recently established Board of Protection of the Native Indians. Mr. W. Knocke paid them a very short visit in the month of October, 1912, and he describes his observations in a pamphlet entitled "Algunas Indicaciones sobre los Uti-krag del Rio Doce," issued separately from the *Revista de Historia y Geografia* (vol. v., 1913). The name of Botocudos, given them by the Portuguese, refers to the plugs with which the men distend their ear lobes, the women also the lower lip; this is now becoming unfashionable. When in their wilds the women are stark naked. They are the ugly and less intelligent sex, with a considerably darker colour than the decidedly intelligent men. Their household goods seem to be restricted to bows and arrows, plaited bags, and bamboo water-vessels; consequently they cannot cook, but only roast their food. They are clay-eaters. The nasal flute is disappearing. They are able to count up to five, have three kinds of dances, and bury their dead. There is the following curious parallelism between these Uti-krag, which in their idiom means Tortoise-Sierra, and the Mimba of New Guinea (*cf.* Pilhofer, *Petermann's Mittheil.,* September, 1912):—They construct stockades by putting numbers of sharpened sticks, 4 to 5 in. in length, into the ground, covered with leaves. As the enemy, when treading on these spikes, is sure to stumble, he falls upon a second line of larger sharpened sticks, also concealed. The author thinks that this little tribe is not so much a sample of the vigorous primitive savage as rather ethically impoverished through life in the forest. There are eight photographs of the people, their arms, and the stockade spikes.

THE excellence of the work being done by French physical anthropologists is exemplified by the elaborate descriptive memoir by Prof. M. R. Anthony on the fossil skull of La Quina, contributed to *Bulletins et Mémoires de la Société d'Anthropologie* (No. 2, for 1913). The writer identifies it with the Neanderthal group, including the Spy, La Chapelle, and Gibraltar skulls. This comprehensive, well-illustrated memoir is an important contribution to our knowledge of palæolithic man.

THE seventh annual report on the results of the chemical and bacteriological examination of London waters for the twelve months ending March 31, 1913, by Dr. Houston, has been issued by the Metropolitan Water Board. After a summary of the condition of the raw water and the effects of storage and filtration, Dr. Houston's final conclusion is that the "quality policy" of the Metropolitan Water Board should be directed towards securing an "epidemiologically sterile" water (*i.e.*, a water containing none of the microbes associated with water-borne disease) *antecedent* to filtration, by means of storage (sedimentation, devitalisation, and equalisation), aided, if need be, by the occasional employment of supplementary processes of water purification.

THE final report of the Luangwa Sleeping Sickness Commission, by Dr. Kinghorn, Dr. Yorke, and Mr. Lloyd, published in a recent number of the Annals of Tropical Medicine and Parasitology (vol. vii., No. 2) with many illustrations, is a very important contribution to the study of trypanosomiasis in man and animals. Especially valuable are the observations on the human trypanosome, *T. rhodesiense*, its wide distribution in south Central Africa, its occurrence in wild game and domestic stock, and its transmission by *Glossina morsitans*. The authors affirm emphatically that the fly does not become infective until the trypanosome has invaded its salivary glands, an event which is the second and final act of a developmental cycle that begins in the gut of the fly. It was found that the first portion of this cycle could proceed at lower temperatures (60°–70° F.), but that for its completion higher temperatures (75°–85° F.) are essential. The parasites can, however, persist in the fly at an incomplete stage of their development for at least sixty days under unfavourable climatic conditions. Several species of trypanosomes, some old, some new, are described from wild game or domestic stock; remarkable among the new species is a large form of the ingens-type, to which the name *T. tragelaphi* is given, found in the blood of the sitatunga, *Limnotragus spekei*.

THE problems connected with tsetse-flies and the parasites of man and animals which they unwittingly transmit are perhaps the most important questions with which European administrators of African territories have to deal at the present time, and these troublesome insects continue to receive an amount of attention which their purely scientific interest would never have aroused. In the Annals of Tropical Medicine and Parasitology (vol. vii., Part 2), Prof. Newstead describes a new species of tsetse-fly from the Congo Free State under the name *Glossina severini*; and in the same number Mr. Llewellyn Lloyd publishes records and photographs of the breeding-places of *G. morsitans* at Ngoa, on the Congo-Zambesi watershed. The pupæ of *G. morsitans* were always found either in association with trees or in holes in the ground; in the former case the trees were always abnormal or injured. The pupæ were never found at the base of normal trees or under bushes, and they are always deposited in such positions that they are not likely to be scratched up by game-birds. In the Bulletin of Entomological Research (vol. iv., Part 1), Dr. Scott Macfie discusses, with the aid of many photographs, the distribution of tsetse-flies in the Ilorin province of northern Nigeria, and describes a new variety of *G. palpalis*, with an excellent coloured illustration. In the same journal Dr. J. O. Shircore describes two new varieties of *G. morsitans* from Nyasaland.

THE proceedings of the Orchid Conference held by the Royal Horticultural Society in November last are reported at length in the Society's *Journal* (vol. xxxviii., Part 3). They include four papers read at the Conference, in the first of which Prof. F. Keeble discussed the physiology of fertilisation, with special reference to recent investigations by Lutz, Fitting, and others, and pointed out that pollination may bring about three types of events: (1) fertilisation, (2) changes due to contact of pollen with the stigmatic surface, and (3) results which may be described as intoxications or responses to chemical stimulation. In a paper on the application of genetics to orchid breeding, Major C. C. Hurst recapitulated the first principles of genetics, and pointed out that as regards any one heritable character represented by a factor, there are three distinct kinds of individual plants—homozygous or pure, heterozygous or impure, and zerozygous or wanting. He also dealt with the identification of individual "stud" plants, colour and albinism, self-sterility in orchids, &c.

IT requires an altogether special equipment, not only of exact zoological and historical knowledge but also of sympathetic insight into the conditions which prevailed in the past, to compose such a delightful lecture as that which Prof. F. J. Cole, of Reading, has published in the Transactions of the Liverpool Biological Society (February 14, 1913). In his crisp and epigrammatic treatment of a series of well-chosen incidents he has admirably brought before us "the early days of comparative anatomy," and the feeling of most readers, and especially those who from their personal experience realise how difficult such knowledge is to acquire, will be to emulate Oliver Twist's example and ask for more. It is quite impossible to summarise a report so crowded with curious information, witty comment, and historical insight, illuminating the whole development of the science of comparative anatomy. From the knowledge acquired as a collector of old "anatomies," Dr. Cole has been able to explain the loose methods of publication in the seventeenth and eighteenth centuries, which opened the way for those glaring instances of unscrupulous plagiarism that have ever been a source of amazement to us who live in such vastly different circumstances. But no part of the discourse excels in piquancy and common sense the opening "apology" for the study of the history of biology.

A RECENT number of the *Centralblatt für Bakteriologie, Parasitenkunde*, &c. (Zweite Abt., Band 38) contains a detailed account by O. Schneider-Orelli of investigations on the life-history and habits of *Xyleborus dispar*, one of the bark-beetles (Scolytidæ). This species, notorious for the injuries it inflicts on fruit-trees, is remarkable for its symbiosis with a fungus, *Monilia candida*, Hartig. The female beetles, fertilised in the autumn, hibernate in their burrows through the winter and swarm out in the following April and May. Each female then becomes the foundress of a new colony; she bores into a tree and makes a system of burrows, the walls of which become lined with a growth of the fungus, forming a dense white mass, the so-called "ambrosia." The mother-beetle lays her eggs in the burrows and the larvæ feed on the ambrosia-fungus, not on the wood of the tree. Living cells or spores of the fungus are not to be found in the digestive tract of the larva, pupa, or newly hatched adult beetle, but the female beetles appear to take up the fungus from the walls of the burrow in which they have been bred, and the stomachs of the mother-beetles always contain a store of the fungus, capable of germinating. The culture is started in the new burrows by regurgitation of the fungus from the stomach, and is continued by the beetle plucking off clumps of the young culture and planting them further along in the burrow. If disturbed in her agricultural operations, the mother-beetle hastily swallows as much as she can of the fungus.

IN a paper on the psychology of insects, read before the General Malarial Committee at Madras in November, 1912, Prof. Howlett, after giving an account of experiments carried out by him on the response of insects to stimuli, comes to the conclusion that insects are to be regarded "not as intelligent beings consciously shaping a path through life, but as being in a sort of active hypnotic trance." It is claimed that this view of insect-psychology opens up great possibilities in the study of insect carriers of disease, since "it is no intelligent foe we have to fight, but a mere battalion of somnambulists." If we discover the stimuli or particular conditions which determine the actions of an insect, we can apply them to its undoing. It was found, for example, that the females of the fruit-fly, a serious pest in some parts of India, emitted an odour resembling ordinary citronella, and that the males could be caught in very large numbers by baiting traps with citronella, since they came to the traps and remained there apparently under a blind impulse to follow the scent of the female. In this way they had succeeded in checking largely the incidence of the fruit-fly pest.

IN reference to a recent paragraph in our notes columns on a large dinosaurian limb-bone from Bushman's River, S. Africa, we have received a letter from Dr. R. Broom pointing out that Owen was incorrect in stating that Anthodon came from that locality, and that (as mentioned in *Brit. Mus. Cat. Foss. Reptilia*) its real place of origin was Stylkrantz. It is added that Anthodon is not a dinosaur, but a pariasaurian, and is thus rightly classified in the work just quoted. Dr. Broom appears to forget that in 1895 (*Rec. Albany Mus.*, vol. i., p. 277) he himself stated in reference to Anthodon that there "seems a strong probability that the three original specimens were got by Bain at Bushman's River." Later on he observed that "by Owen Anthodon was believed to be a dinosaur; by Lydekker and others it has been believed to be allied to Pareiasaurus. . . . The teeth are unlike those of Pareiasaurus, and strikingly like those of dinosaurs, and it seems possible that Owen may ultimately prove to be right." Basing our remarks on these statements, our one error was the assertion that Anthodon is *known* to be a dinosaur. As the Stylkrantz beds are Permian, and those of Bushman's River Cretaceous, there can, of course, be no community between their faunas.

THE September number of *The Selborne Magazine* contains a list of lectures delivered before the Selborne Society during the past few years, and the names of the lecturers. Any of these discourses, which cover a great range of subjects, and are profusely illustrated with lantern-slides, the respective lecturers are prepared to repeat, either singly or in series, to local natural history societies or schools in return for their expenses, or moderate fees.

To the August number of *The Irish Naturalist* Dr. R. F. Scharff contributes a note on the Belmullet whaling station, based on a paper by Mr. Burfield in the British Association report for 1912. The number of whales taken by the Blacksod Whaling Company in 1911 was sixty-three, against fifty-five the previous year. The catch of the other company is not given.

AN interesting article by Mr. C. H. Eshleman on the "Climatic Effect of the Great Lakes as Typified at Grand Haven, Mich.," on the east of the lake, is published in the meteorological chart for September issued by the U.S. Weather Bureau. Few stations are more favourably placed for this purpose; it has a broad expanse of eighty-five miles of water to the westward, and the shore is comparatively regular and almost straight to the north and south. Its temperature is compared with that of Milwaukee on the west shore, and with several inland stations lying to the westward in the same latitude. The tables show, *inter alia,* that the annual means are practically the same; the monthly maxima along the lake are strikingly modified in spring and summer, but only slightly in the other seasons; the minima are greatly modified in autumn and winter. The lake acts as a barrier against the extreme cold from the far northwest; the temperature at Grand Haven is often 20° higher than at Milwaukee, but with easterly winds it is almost as cold at Grand Haven as away from the lake. All the other climatic features are modified, but the effect on yearly or monthly precipitation is not striking. We notice with regret that the publication of these valuable meteorological charts, including those of the great oceans, has now ceased.

THE after-shocks of the Messina earthquake of December 28, 1908, have been referred to in several of our Notes. On the last occasion (vol. xci., p. 93) a summary was given of observations made at Messina during the year 1909. From these it appeared that the distribution in time of the after-shocks did not follow Omori's law, $y=h/(k+x)$, where h and k are constants and y the number of after-shocks during a given interval at time x from the earthquake. These observations, however, referred to all the shocks felt at Messina, and not only to the true after-shocks of the great earthquake. The latter are distinguished in the valuable notices of earthquakes observed in Italy during 1909, of which we have received the last three numbers for the year. From these it is seen that the decline in frequency of the true after-shocks, though exhibiting the usual fluctuations, does not depart widely from Omori's well-known law.

PART 14 of the *Verhandlungen* of the German Physical Society contains further details of the method used and the results obtained by Drs. A. Eucken and F. Schwers, of the University of Berlin, in their measurements of specific heats of substances at very low temperatures. A cylindrical block of the material to be investigated had a constantan heating wire of 2 mm. diameter and 200 ohms resistance wound round it, electrical insulation and adequate thermal contact being secured by varnish. The temperature attained was determined from the resistance of a lead wire wound round the cylinder in the same way. The electrical heating was carried out in a vacuum vessel at temperatures between 16° and 92° on the absolute scale. Over this range the specific heats of fluorspar and iron pyrites crystals vary as the third power of the absolute temperature in agreement with the theory put forward by Debye in the first instance for monatomic substances.

"THE Coal Resources of the World," to which allusion was made in NATURE of September 4, is being brought out in this country by the American Book Supply Co., Ltd., 149 Strand.

OUR ASTRONOMICAL COLUMN.

A NEW COMET.—A telegram from the Centralstelle at Kiel, dated September 3, announced the discovery of a comet of magnitude 10·0 by Dr. Metcalf, of Winchester, Massachusetts, on September 1, at 8h. 42·0m. M.T. Winchester. Its position was given as RA 6h. 50m., and declination 57° 0′ N., and was stated to have a slow motion to the north. It was suggested that it possibly might be Westphal's comet. A second telegram, dated September 4, stated that Prof. Antoniazzi had seen the same object on September 3 at 15h. 39·4m. M.T. Padua. The position he gave was RA 6h. 48m. 12s., and declination 57° 25′ 34″ N., the daily motion in RA being −1m. 16s., and in declination +34′. According to a writer in *The Times* (September 6), Prof. Antoniazzi's observation indicates that the comet cannot be that of Westphal, as the daily motion is diminishing instead of increasing.

The new comet is in the constellation of the Lynx, and therefore to be observed any time during the night, but best visible after midnight.

The following elements and ephemeris of comet *b* (Metcalf) have been communicated from Kiel, based on the observations of September 2, 3, and 4:—

$$\begin{array}{l} T = 1913 \text{ July } 20.1129 \text{ Berlin.} \\ \left.\begin{array}{l} \omega = 51^\circ\ 31{\cdot}47' \\ \Omega = 136^\circ\ 9{\cdot}99' \\ i = 142^\circ\ 49{\cdot}23' \end{array}\right\} 1913{\cdot}0. \\ \log q = 0{\cdot}20954 \end{array}$$

12h. M.T. Berlin.

	R.A. h. m. s		Dec. ° ′
Sept. 11 ...	6 32 54	...	+62 21·6
13 ...	27 1	...	63 44·7
15 ...	6 19 53		65 10 5

The magnitude is given as 10·5 on September 5 and 10·3 on September 15.

ANOTHER COMET.—Another telegram from Kiel, dated September 7, states that Dr. K. Graff discovered on September 6, at 15h. 9·1m. M.T. Bergedorf, a comet of the 11th magnitude. Its position is given as R.A. 23h. 48m. 1·8s., and declination 0° 27′ 44″ S. It is thus situated in the constellation of Pisces, and should be best seen about midnight.

THE PROTECTION OF SILVERED MIRRORS FROM TARNISHING.—Everyone who uses mirrors for astronomical purposes would welcome a satisfactory method of coating them with some material for preventing tarnishing. M. Perot some years ago published an account of a process he employed successfully for treating mirrors at the Meudon Observatory. It consisted of a thin coating of collodion being applied to the surface of the mirror, the film being obtained by pouring over the mirror a solution of collodion in amyl acetate. The mirrors used at the Helwan Observatory are subject to becoming spotted a few weeks after silvering, and attempts have been made to protect them. Mr. S. H. Trimen, of the Survey Department Laboratories, made the various trials (Khedivial Observatory, Helwan, Bulletin No. 10), but after repeated attempts with solutions of varying percentages he had at length to abandon the process. Blurred images of the stars and curious flares on the photographs of the bright stars were always the result of the application of the film. It is suggested that the problem may possibly be solved by using a solution possessing a lower viscosity, and it is to be hoped that such an attempt will be made.

RESEARCHES ON THE SUN.—The last two numbers of the *Astrophysical Journal* (June and July) have contained several important researches relating to solar physics. Prof. George E. Hale, in the July number, publishes his most valuable paper on the "Preliminary Results of an Attempt to Detect the General Magnetic Field of the Sun," a summary of which, based on an advanced proof, having been given in a previous number of this journal (June 17, p. 505). In connection with this research, Mr. Frederick H. Seares gives in the same number a paper entitled, "The Displacement-curve of the Sun's General Magnetic Field." The spectrum lines observed with the 75-ft. spectrographs and the polarising apparatus of the 150-ft. tower telescope showed displacements that apparently could not be attributed to any other cause than a general magnetic field of the sun, and the object of his research was to provide a more rigorous control of the results and their interpretation. Thus in the paper he compares the observed displacements with the theoretical displacement-curve derived on the assumption that the sun is a magnetised sphere, and further he provides formulæ for determining the position of the magnetic axis relative to the axis of rotation.

In the June number Mr. Charles E. St. John deals with the remarkable discovery by Mr. Evershed of the displacement of the Fraunhofer lines in the penumbræ of sunspots. The paper is entitled, "The Distribution of Velocities in the Solar Vortex," and the observations recorded in this research are in entire accord with Mr. Evershed's hypothesis that the displacements considered are due to a movement of the solar vapours tangential to the solar surface and radial to the axis of the spot vortex. Previous reference has already been made of Prof. Slocum's second paper on the circulation in the solar atmosphere as indicated by prominences.

THE INSTITUTE OF METALS.

THE autumn meeting of the Institute of Metals took place at Ghent on August 28 and 29 last. This was the first occasion on which this institute has held a meeting abroad, and the gathering may be described as a complete success. The attendance of members (about seventy-five) was particularly satisfactory on account of the representative character of those present, the foreign members of the institute, including members from Russia, Germany, Belgium, and America, being particularly well represented. The mornings of August 28 and 29 were devoted to the discussion of a long and interesting list of papers, while the afternoons were utilised for visits to works, the inspection of the exhibition, and the antiquities of the city. The social functions included a reception by the Burgomestre of Ghent in the ancient and beautiful Hotel de Ville.

The foremost place in the work of the meeting was taken by the reading and discussion of the second report to the Corrosion Committee, presented by Dr. G. Bengough and R. M. Jones. This report deals with the examination of a considerable number of examples of corroded tubes from service, of the investigation of the mechanism of corrosion in sea-water, both at the ordinary temperature and at higher temperatures by means of small laboratory experiments,